How to assess and manage frailty in patients with HIV

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Levett T, Wright J

As a result of the successful treatment of HIV over the last four decades, people living with HIV (PLWH) can now expect a near normal life expectancy[1]. This change in demographic alongside later life acquisition of HIV[2], has resulted in clinical services now seeing an older HIV cohort, with patients experiencing many of the problems of an older HIV-negative cohort such as multiple medical diagnoses, polypharmacy and frailty.

An example case:

Mr X, age 70 with 'well-controlled' chronic HIV infection, presents to his routine HIV clinic appointment complaining of recurrent falls, fatigue, low mood, self-reported memory concerns, episodes of urinary incontinence and increased difficulty looking after himself at home.

HIV background:

- Diagnosed in 1995, aged 48 years.
- Initial CD4 count 45 cells/mm^3
- Late presentation with *Pneumocystis jiroveci* pneumonia, defining AIDS.
- Started antiretroviral drugs (ARVs) 1995
- Current CD4 556 cells/mm^3, viral load (VL) undetectable.

Past Medical History:

- Ischaemic Heart Disease
- Type 2 Diabetes mellitus
- Hypertension
- Peripheral neuropathy
- Depression
- Benign Prostatic Hypertrophy and bladder instability

Drug history:

- Diltiazem 180mg OD
- Bendroflumethiazide 2.5mg OD
- Gabapentin 900mg tds
- Metformin MR 1g OD
- Mirtazepine 45mg OD
- Isosorbide mononitrate 20mg BD
- Aspirin 75mg OD
- Ramipril 10mg OD
- Solifenacin 5mg OD
- Tamsulosin 400mcg OD

ARV exposure:

- Current: Neviripine/Tenofovir/Raltegravir

Despite good HIV control, this patient has a complex medical background, with polypharmacy, uncontrolled comorbidities and presentations representing frailty syndromes, namely falls, continence issues, and both cognitive and functional decline. In the management of complex older adults, the next step is a comprehensive geriatric assessment (CGA) to investigate potential causes of his symptoms, including the impact of possible psychiatric diagnoses, the aetiology and relevance of drug interactions, and to consider referral to appropriate multidisciplinary team (MDT) members. In this case, the falls were in part due to postural hypotension, prompting discontinuation of bendroflumethiazide, additionally aiding his urinary symptoms. Poorly controlled diabetes was causing polyuria and was optimised by adding gliclazide. A cognitive screen, implied impairment and he was referred for formal memory assessment, as well to physiotherapy for strength and balance training. As a result, his falls frequency reduced, urinary symptoms improved and he remains living at home with a once daily care package, with improvements seen in both mood and cognition.

Frailty is a term frequently used in clinical assessments to describe patients at risk of decline in health or function. Patients with frailty are vulnerable to external stressors as they have limited reserve, such that a relatively common problem i.e. respiratory tract infection could cause a significant event such as a fall, episode of delirium, hospitalisation or even death[3]. The concept of frailty is generally understood but there remains considerable heterogeneity in how clinicians define, investigate and manage those with frailty within their practice. The lack of consensus regarding the definition of frailty hampers both the development of a gold-standard diagnostic tool and an evidence-based approach to the care of patients with frailty.

Two main schools of thought predominate the literature: The frailty phenotype[4] and the frailty index (FI)[5]. Fried *et al.* used data from the Cardiovascular Health Study to develop the frailty phenotype; an assessment based on the presence of five criteria: unintentional weight loss, exhaustion, weakness, low physical activity and slowed walking speed[4]. Patients are considered frail if they possess three of the five criteria, those with one/two classified as 'pre-frail' and those without deficit deemed robust. Baseline frailty status predicted adverse patient outcomes such as falls, hospitalisation and death[4]. This model is the most frequently utilised tool in frailty research[6], especially in the context of HIV[7]. However, it has been challenged, as being less practical to apply in clinical settings and criticised for its uni-dimensional nature that focuses mainly on muscle strength and function, neglecting psychological and social factors which are known to impact on frailty[3,8].

Rockwood et al. propose the FI, a multi-dimensional approach where 'deficits' accumulate across functional, cognitive and physical domains with age[5]. A greater number of deficits confers a greater degree of frailty, with a score of 0.25 (e.g. representing 10 of 40 deficits) often taken as the threshold for frailty[5]. The FI may be preferential as its continuous scoring fits with the theory of declining physiological reserve, alongside the association between increasing FI and adverse outcomes[5]. Criticisms focus on the large number of items required to create and therefore operationalise an index in the clinical environment, though the use of electronic systems may

overcome this[9]. Clarity on when to intervene and focus health interventions to attempt to improve patients' reserve is lacking.

A plethora of alternative frailty screening tools have appeared in the literature based on differing patient populations, which mainly take the rule-based criterion approach but differing in their chosen frailty predictors. Debate persists as to what should be included in such a screening tool, particularly on the role of psychosocial and cognitive factors. Frailty is being increasingly used to direct care of older patients with many clinical specialties using these tools to assess risk of decline following an adverse event or treatment, such as an operation. It should be recognised that frailty is a dynamic process and although there is no cure for frailty there may be components amenable to treatment or optimisation[3].

The British Geriatric Society (BGS) 'Fit for Frailty' document reports best practice guidance for frailty[10]. Aimed at outpatient and community settings it recommends any interaction with an older person as part of health or social care is an opportunity to asses for frailty[10]. It recommends that frailty is recognised and treated as a long term condition and where present, a holistic assessment should result in a comprehensive care and support plan to avoid episodic acute deteriorations which often result in hospital admissions[10].

In Brighton, 30% of HIV service users are aged over 50. This, combined with an increasing clinical complexity prompted the establishment of a specialised clinic for the management of older PLWH exhibiting frailty syndromes. The clinical team comprises an HIV physician, geriatrician, HIV specialist nurse and an HIV pharmacist. In keeping with BGS guidelines patients are screened for frailty syndromes and then referred internally from the patient's HIV clinician to the dedicated 'Silver' clinic for comprehensive assessment and patient-centred management.

Indications for referral/screen for frailty syndromes:

- Patients over 50 years
- Multiple comorbidities
- Polypharmacy
- Functional or mobility decline

Clinical assessment and priorities:

- Management of polypharmacy, considering drug interactions and adverse effects, facilitated through pre-clinic MDT discussion, including an HIV pharmacist.
- Optimising the management of comorbidities.
- Identifying social and psychological problems.
- Formulating health interventions including exercise programmes and peer support groups.

- Individualised care as appropriate to patients needs and wishes with access to respite and HIV palliative care services

All treatment plans are copied to the referring HIV consultant and, with consent, to the patient's GP with referral to MDT services made through the standard referral pathways for non-HIV older patients in Brighton.

A Brighton based team conducted an online survey of UK HIV services to investigate the current provision of and perceived need for dedicated ageing services for PLWH[11]. Of 102 services surveyed, 5 had an HIV-physician with an interest in ageing and only 2 reported a specific clinic aimed at older patients. 23% reported a perceived need for ageing services, however inadequate patient population and satisfaction with existing external services were stated as the main reasons against dedicated clinics. Two thirds are deferring complex issues to GPs, meaning a third are using secondary care services directly to meet this need. 70% of respondents felt that enhanced BHIVA guidance around investigating and monitoring older adults was necessary[11]. This is a new and expanding area but there is currently little evidence as to which model improves outcomes.

We have also undertaken a year long prospective observational study recruiting PLWH aged ≥50 from five clinics across Sussex[12]. Frailty was defined by a modified Fried frailty phenotype and potential predictors of frailty were evaluated from collected demographic, clinical, psychosocial and functional parameters. 253 participants were recruited (90.9% male), with median age of 59.6 years. 48/253 met frailty criteria, giving a prevalence of 19% (95% CI 14.6-24.3) A further 111/253 (43.9%) were pre-frail 94/253 (37.1%) robust. The interesting finding from this cohort was that symptoms of low mood, number of co-morbidities and increasing number of non-HIV medications were better predictors of frailty than age or HIV-specific factors such as duration of HIV or immune parameters[12].

Our data confirms that frailty is an important consideration in older PLWH and our survey highlights a perceived need to increase specialist services in some areas to meet these demands. The Brighton demographic has a higher older proportion, predominantly MSM, with reasonably low ethnic mix and female representation, therefore our model needs to be investigated in other centres, but our principles remain in keeping with The BGS 'Fit for Frailty' document[10].

Conclusion:

In managing older PLWH it is increasingly frailty syndromes that are the priorities of care. A service that screens for frailty identifiers will help distinguish which patients require further multidisciplinary assessment, and enable the development of comprehensive care plans.

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